

REMARKS

Favorable reconsideration of this application, in view of the present amendment and in light of the following discussion, is respectfully requested.

Claims 1-28 are pending in this application. Claims 2, 3, 23 and 24 are amended, and no claims are cancelled or added. The amendments to the claims contained herein are of equivalent scope as originally filed, and thus are not narrowing. Applicants respectfully submit that the amendments to the claims address the 35 U.S.C. § 112, second paragraph rejections and would place the claims in better form for appeal. Accordingly, Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered on the record, which is within the Examiner's discretion.

ALLOWABLE SUBJECT MATTER

Applicants note with appreciation the indication in the October 31, 2005 Office Action that claims 2-10, 16, 17, and 27 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph, set forth in the October 31, 2005 Office Action and to include all the limitations of the base claim and any intervening claims.

Applicants respectfully submit that the claim amendments and following discussion of this response traverse the outstanding claim objections and rejections, and therefore place claims 1-28 in condition for formal allowance. Accordingly, claims 2-10, 16, 17, and 27 have been maintained in dependent form.

CLAIM REJECTIONS UNDER 35 U.S.C. § 112

Claims 2, 3 and 24 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which the

Applicants regard as the invention. Applicants respectfully traverse this rejection as described below.

Claims 2 and 3 are amended, thereby removing the rejected language “in case it is”, and claims 23 and 24 have been amended to further clarify the claimed invention. Applicants are somewhat unclear as to the specific 35 U.S.C. § 112, second paragraph rejection of claim 24, and accordingly, request that the Examiner contact the Applicants’ representative for a brief telephone interview and possible grant of permission for an Examiner’s Amendment if the Examiner believes claim 24 still fails to provide proper antecedent basis.

In light of the above, Applicants respectfully request that the rejections of claims 2-3 and 24 under 35 U.S.C. § 112, second paragraph be withdrawn.

CLAIMS REJECTIONS UNDER 35 U.S.C. § 103

Claims 1, 11-15, 18-26, and 28 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Castelli et al. (U.S. Patent No. 6,535,872, herein Castelli) in view of Pouschine et al. (U.S. Patent No. 5,918,232, herein Pouschine). The Applicants respectfully traverse this rejection for the reasons detailed below.

As explained in the Applicants’ specification from page 2, line 34 to page 3, line 8, conventional pre-aggregation techniques assume that the dimensional structures are summarisable. More specifically, the mappings in dimension hierarchies may be *onto*, *covering*, and *strict* (i.e., the relationships between facts and dimensions must be many-to-one, and the facts must always be mapped to the lowest categories and dimensions).

Conversely, example embodiments of the present invention provide transformation techniques that render dimensions with hierarchies that are *non-onto*, *non-covering*, and/or *non-strict* summarisable. Amended claim 1 is directed to a method for transforming a

general on-line analytical processing dimension into an at least partly aggregation normalised dimension, by means of a computer, the dimension having dimension values organized into categories of dimension values based on a partial ordering, the dimension comprising mappings of links between dimension values. More specifically, the method of amended claim 1 recites “analysing the mapping to determine irregularities of the dimension, by means of analysing means executed by the computer.” Independent claim 15 recites features similar to the features of the method recited in amended claim 1.

Independent claim 23 recites a computer system for on-line analytical processing having data storage means associated therewith on which a multi-dimensional objection is stored. The multi-dimensional object recited in claim 23 includes a set of facts, a first plurality of dimensions, “at least one of the dimensions of the first plurality of dimensions being irregular,” and a second plurality of dimensions.

The Office Action indicates that the above-specified features of independent claims 1, 15 and 23 are taught by Castelli at column 5, line 5 to column 6, lines 50 and column 8, lines 44-62. However, as detailed below, Applicants respectfully submit the identified portion of Castelli does not disclose, teach or suggest “analysing the mapping to determine irregularities of the dimension, by means of analysing means executed by the computer,” as recited in independent claim 1 or the similar features of independent claims 15 and 23.

In Castelli, the dimension is already assumed to be summarisable. Further, Castelli does not disclose, teach or suggest a dimension hierarchy, as each attribute is mapped to a separate dimension. Evidence that each attribute is mapped to a separate dimension is illustrated at least in Figure 2, the description thereof and column 2, line 37-39 of Castelli. Simple, regular dimension hierarchies may be simulated by including all the dimension level attributes of a dimension as separate dimensions. One example is an SQL CUBE operator that is described in Castelli at column 4, line 39-41 (the SQL CUBE operator is also referred

to in reference [6] of the Applicants' specification). However, simulating dimension hierarchies in this way implies that a lower-level dimension value may have at most one parent value, i.e., the hierarchy is *strict*, that all non-bottom dimension values must have at least one child value, i.e., the hierarchy is *onto*, and that direct links between dimension values cannot "jump over" intermediate levels, i.e., the hierarchy is *covering*.

Further, Castelli as indicated at column 5, line 8, requires that the aggregation functions are distributive. Accordingly, the dimension input to the method described by Castelli is already *summarisable* (i.e. aggregation normalized) as described in the Applicants' specification at least at page 21, line 12-15. As a result, a fact can be attached to at most one dimension value in the same dimension. While Castelli may describe a way of simulating dimension hierarchies through the use of the partial aggregation functions, Castelli requires that the partial aggregation functions are distributive, which means that only *summarisable/regular* hierarchies can be simulated. Figures 7 and 8 in Castelli, show that the partial aggregation mappings are non-overlapping (corresponding to *strict* hierarchies), that a smaller (lower-level) cell is always mapped to a cell in the next granularity (the next, higher level) (corresponding to *covering* hierarchies), and that a larger (higher-level, not of the finest granularity) cell is always subdivided into finer (lower-level) cells (corresponding to *onto* hierarchies).

Consequently, in Castelli there is no need to analyze a mapping to determine irregularities of the dimension, because of the assumption in Castelli that there are no such irregularities.

In light of the above, Applicants respectfully submit that Castelli fails to disclose, teach, or suggest the method recited in amended claim 1, including "analysing the mapping to determine *irregularities* of the dimension, by means of analysing means executed by the computer" as well as claims 15 and 23 including similar features.

Pouschine is directed to a multidimensional modeling method and system for creating hyper structures which are to be contained in a computer memory. The system and method of Pouschine obtains measurements of physical objects and activities which are related to the entity to be modeled in the computer hyper structure.¹

However, Pouschine fails to cure the deficiencies of Castelli with respect to the features of independent claims 1, 15, and 23 described above.

Therefore, Applicants respectfully submit that neither Castelli nor Pouschine, either alone or in any proper combination, disclose, teach, or suggest each and every feature of independent claims 1, 15, and 23.

Therefore, Applicants respectfully request that the rejection of claims 1, 15, and 23 and claims 11-14, 18-22, 24, 25, and 28 depending therefrom under 35 U.S.C. § 103(a) as unpatentable over Castelli in view of Pouschine, be withdrawn.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-28 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John A. Castellano at the telephone number of the undersigned below.

¹ Pouschine, Abstract.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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By

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